

# Aviation News

McGraw-Hill Publishing Company, Inc.

JULY 15, 1946

## REPORT FROM BIKINI—

A "smoke-clearing" evaluation of A-bomb's revolutionary effect on aeronautical science—and the changes it demands in aircraft and accessory design and operation.

By SCHOLER BANGS

*Aviation News Correspondent at Operation Crossroads*

*(Radio from Kwajalein)*

**CLEAR GUIDEPOSTS**—many already existing but unheeded—pointing to America's future military aviation were sharply defined at Operation Crossroads. Most significant among them indicate:

1. Complete obsolescence of the conventional airplane as a defense-offense weapon with 10 years . . .

2. Replacement, within 5 years, of today's bombers with, first, very long range radio-controlled bombers and, second, very long range manned bombers capable of launching guided missiles fitted with atomic warheads . . .

3. Limited but continuing production development of piston engine and jet powered bombers and fighters now on assembly lines, with order sizes designed to maintain a manufacturing nucleus capable of quick expansion to war production . . .

4. Greater emphasis on maintenance for bombers capable of striking anywhere in the world . . .

5. Immediate advancement of worldwide, long range weather forecasting as an integral part of national defense . . .

6. Immediate re-evaluation of U. S. air forces and drastic revision of now-obsolete concepts of air war to activate new weapons and tactics.

With 2-3,000-mph. guided missiles a distinct possibility, only three atomic defenses appear possible: First, strong anti-aircraft and fighter defense using counter-atomic weapons to attack missiles or bombers; second, striking at atomic bases; and third, striking at atomic manufacturing centers.

Only the third is given much chance for success by military leaders, which points to interim aircraft pending guided missile development — fast, heavy bombers capable of hitting any place on earth and

returning, and possessing flight characteristics suited to radio control.

As to controls, Bikini established: That drones (or guided missiles) suffer no radiological interference; electronic circuits function normally flying through atomic clouds; engine power remains constant, with no evidence of oxygen starvation; turbulence at all levels within atomic clouds is probably less than continental thunderheads.

Atomic guided missiles will call for finest possible maintenance; loss of a single plane over enemy territory due to aborted maintenance might prove disastrous in giving the enemy a ready-assembled bomb which could be shot right back. Such maintenance will call for specialization rather than round-the-clock work on a given plane.

Weather forecasting will increase in importance with range—with extremely accurate 24-hr. forecasts a tactical "must." Meteorologists, on basis of Bikini experience, hold hope for reasonably accurate 15-day forecasts in the foreseeable future.

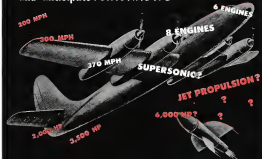
While the Bikini test was essentially military, aircraft and accessory producers, research engineers, and airline operators can benefit from trends established here. One example: Military development of heavy drones leading to civil application of remote control techniques conceivably useful in operating crewless freighters having entire lift devoted to fuel and payload.

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ALSO SEE these exclusive Bikini articles: Atom Bomb Pounded Cruiser/Pensacola Into Twisted Wreck (Page 7); Drones Getting Nod for Bomb Missions (Page 10); Bikini Was Science Test, Observer Warns (Page 10); and Behavior Data Gathered in Bomb Test (Page 21).

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## Kidde Engineered Systems fire-protect *TODAY'S* planes and anticipate *TOMORROW'S*



**H**IGHER RPM, larger engines, and more of them per plane. That means new problems in fire protection.

Kidde engineered extinguishing systems—planned for the plane-keep constantly in step with these new requirements. On many of the faster, larger planes that have already taken to the air, Kidde systems are helping to establish high standards of fire safety.

For revolutionary designs still in the drawing boards, Kidde engineers are prepared to develop equally effective, reliable extinguishing systems.

Aircraft manufacturers and transport companies are invited to discuss their fire protection problems with Kidde.

Walter Kidde & Company, Inc., 105 Main Street, Fall River, N. J.

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## THE AVIATION NEWS

# Washington Observer



**NAVY IS FOILED AGAIN**—This week's installment in the dramatic undercurrent battle between those two giants, the U. S. Army and Navy, involves a Navy-sponsored attempt to preclude the AAF, by law, from equipping its attack and rocket development. Navy was killed Sen. Thomas Hart of Connecticut, the co-adjutant, but the industry to such his amendment on the 1947 War Department appropriation bill. It was knocked out in the crucial conference committee. Hart insists that missiles and rockets have made strategic bombing ineffective and have outmoded fighter planes as a defensive weapon. The AAF, therefore, is obsolete, William Hart stated. This is a subject that is becoming very delicate in air force circles. Hart's chief concern at present is to keep the AAF from becoming the dominant branch of the service through domination of the missile and rocket fields. AAF officers, however, claim Hart's facts are unfounded. They point to their plans to spend only \$190,000 of their \$185,500,000 contract and development funds for the next fiscal year on winged missile development. AAF emphasis will be on piloted planes and their engines.

**CAB BILL LANGUAGES**—Congressional action this year on the CAB-backed bill giving the Board authority to fix international rates appears doubtful. The measure was submitted to Congress last week by the Bureau of the Budget. Rep. Bulwinkle, chairman of the aviation subcommittee of House Commerce & Foreign Commerce Committee, and Sen. Overton, acting chairman of the Senate Commerce Committee, agree that the proposal is highly controversial and should be deferred until next year, in view of Congressional plans for adjustment in rates as possible. Only strong Administration pressure will provide either Senate Commerce or House Commerce to act on the bill.

**MAY REMEMBER ALL PLANES**—Civil Aeronautics Administration is asking for industry comment on several new numbering system for aircraft registration which will take care of the expanding fleet of civil planes for years to come. Serial numbers are becoming too large and are creating big figures. One system, recommended by Don R. Benish, CAA research chief, would permit 999,000 planes, and within the present series would classify the aircraft by gross type.

**NEW PROBLEM FOR CAA**—Already plagued in its numerous refinements of mass regulations for more planes with fewer employees, CAA could hardly be expected to make more work for its inspectors. But so played on a new Bernhardt provision to set new demands for field men. A spot there for a golf bag

component items strictly, "Golf bag only will be carried."

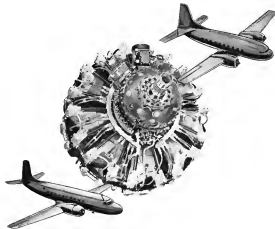
**ITS HOT IN WASHINGTON**—War Assets Administration last week came out with this sober proclamation: "Sale of Thunderbolt Auxiliary Field No. 1, Glendale, Ariz., to the American Institute for Foreign Trade has been authorized at a price of \$407,000 less 100 percent discount." Inexpensive Arizonan new assets were sold confidentially by government officials who refused to be quoted that the Institute, headed by former AAF Chief of Training, Lt. Gen. Barton K. Young, is getting the field free because of its educational status. But under the law, WAA cannot say so plainly. The Institute, incidentally, may make other deals soon.

**VEITS TO WIN C-54s**—Airlines, including TWA, are clamoring for surplus C-54s, which were a ding on the market not many months ago because the air transport industry, generally underemployed in passenger traffic market. War Assets Administration under bar work was down to about 48 Model A's which, even though recently considered undesirable, would be stepped up now by the certified customer. But western have opportunity and probably will get them. The shortage has eased for some time but showed up only recently when WAA could buying planes. Letters then started circulating their purchase options, which removed leased planes at once from WAA's available bin. Further, prospects are very dim for more C-54's being declared surplus by the services. AAF's 1947 appropriation, for example, does not allow purchase of any new transport next year.

**RESEARCH TANGLE**—An attempt is afoot to all of the Army, Navy and joint groups working on research and development is being undertaken by still another joint organization, this one the Joint Research and Development Board, headed by Dr. Vannevar Bush, director of the Office of Scientific Research and Development which died in at June 30. The new board was set up by the War and Navy Secretaries and presumably will be the top-level center to coordinate joint research projects. Two problem children, however, are the Aeronautical Board and Army-Navy Mortarboard Board, both established by Congress. One line in the statute authorizing the new board says: "Previously established joint boards, committees or similar organizations in the field of joint research and development will, however, be reconstituted in consultation of the new joint Board." But to "reconstitute" ANMB or the Aeronautical Board would require legislation.



# Dependable Power for Both



Again it's Pratt & Whitney power for postwar aircraft. Now it's the Consolidated-Vultee 240 and Martin 202 and 303. Each of these new aircraft, capable of carrying 30-40 passengers at 300 m.p.h., will be powered by two R-2800 dependable Double Wasp engines.

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July 15, 1945

## Atom Bomb Pounded Cruiser Pensacola Into Twisted Wreck

*Aviation News* correspondent at Bikini views effects of blast on once-mighty ship; steel decks pounded concave as if by giant fist.

By SCHOLER BANGS

*Briefs to Aviation News*

**Exemplar**—Walk the tilted deck of the stricken heavy cruiser USS *Pensacola*, one thousand tons, and be convinced that if the Bikini atom bomb was a "dud" no enemy power should want a similar sample of U. S. atomic might. As guests at Navy Secretary Foran's twelve of us were down to Bikini to inspect the target ships.

The bomb's unbelievable jolt, a side punch delivered at an angle from blast center, knocked her barrels down, left after-deck structures, pumpled mid-deck into concave masses; stripped thick steel battle bulwarks and doors from hinges and tossed them aside or left them hanging askew, and ripped loose representative planes.

**Steel Doors Distorted**—Steel doors uniformly bore a characteristic concave depression by blast, as if pounded in by giant fist but interiors of rooms beyond the torn doors seemed unharmed. There was no sign of blistered paint or wave of flame. Decks and chairs were in order. Captain D. J. Ramsey, directing the cleanup crew, told us, "that was all done by blast—there was no fire except a small fire in stowed goods on deck." He estimated that the ship might be repaired in four to six months by stripping it to the hull and rebuilding.

Ramsey believes that a crew sheltered below decks would have survived. The radiological action quickly dissipated but the spotty portions on upper decks still banished warnings outlined by the Getzger crew. A brief launch tour showed the powerful *Wendell* after structure battered completely with its upper structures. Surviving ships

were damaged in varying degrees depending upon their distance from the blast center.

**Sea Design Change**—Foran said at Kurejima and see it as part of the target program was fixed. Observers of the blast were convinced that shortly afterward every ship in Lagoon showed phases of smoke. We are unable now to say whether it was actual blast smoke, poisonous debris or conventional dark. Foran, who had just toured ship, told us, "It is impossible that this will be a prevention of ship repairs—particularly of upper structures."

**Air Work Essential**—Sweet and maintenance personnel and training paid off to give air participation in Operation Crossroads a non-perfect score in the first-500-ton atom bomb test.

There will be serious argument as to whether the bomb was a nuclear "dud" producing low-order flames by accident or plan; and whether the Navy for any of a number of reasons may have exerted influence in mounting the blast power of the bomb, but the performance of Navy and Army aircraft and crews during the entire hours before and beyond the last cannot be challenged. Of the 47 aircraft in the air when the bomb fell there were no fatalities and only one plane was lost—a Navy P-51 downed which spun in out of control fifteen minutes before the blast, possibly due to failure of a radio tube in its control vacuum receiver or some other element in the remote control unit.

**Chockablock Previews**—The check-work process of pattern flights by



**CARRIER GETS BRUNT:**

Ship damage sustained by Independence under terrific blast of fourth A-bomb is revealed in this close-up conditions showing torn and twisted structure of stricken carrier. (Associated Press photo)



Department since 1931 and for more than two years as the Director of International Communications, of which aviation was a part. **Business:** *Sturges* discusses the permanent directorship of State's Office of Transport & Communications policy, succeeding **George Blake**, who recently resigned. He has been assistant director.

## Drones Getting Nod For Bomb Missions

Day of piloted bombers ended says Col. Almon, chief of AAF Guided Missile Group.

Radio to Aviation Staff

**KWAJALEIN**—Success of the heavy drone bombers used in the attack last has been termed by Col. H. T. Almon, commander of the AAF's First Experimental Guided Missile Group, a convincing demonstration "that the day of the piloted airplane bombing mission has ended."

The First Experimental Group, based at Eglin Field, Fla., will now take the development of new tactics for the use of unsteered, radio-controlled missiles such as *Avon*, *Rayson* and *Turman* Almon and some 300 of the same heavy drone force, now stationed at Eglin Field, Ala., will leave for Florida shortly after the second Okinawa blast. Almon suggested the heavy drone group for Operation Crossroads.

**No Reason for Crew**—Col. Almon told Aviation Staffers that "We have learned that there is no reason for flying men in a bomber over a heavily-guarded area when, by radio control, it can be converted

into a guided missile, a bomb with wings. With the steady progress of the war we cannot possess in going about our bombing wrong-do, building airplanes and then hitting targets in the planes, when we must have been firing weapons and power plants to the bombs.

"It is quite likely that tomorrow's radio-controlled flying bomb, jet or rocket powered and carried by air to within striking range, will complete its mission with the speed of a V-2, at two to 3,000 mph. There is no question of preparing for this type of warfare, of its coming—it is here. And we're still playing around with airplanes, B-29's and similar aircraft."

Col. Almon emphasized, however, that in his opinion there should be no abandonment of present heavy bombers, and larger bombers now under construction. "That I am convinced that from here on out we should concentrate on guided missile research," he added.

**LeMay Favors Bombers**—A similar view was expressed here by Maj. Gen. Curtis LeMay, deputy chief of air staff for research and development. Although he declares that for an indefinite time the very long-range bomber, the XB-36 and XB-37, will be the backbone of national defense, he comments:

"When the time comes that the airplane is obsolete, I hope we can get it off a quicker than the Navy has the battleship."

One of the projects of Almon's group at Eglin will be the experimental tests guided missiles for defensive purposes. Gen. LeMay's view on this is outlined:

"Don't look for anything spectacular from guided missiles just

yet. We are not going into heavy production of these weapons before we have learned just to use them. During this period production orders will be placed in small lots."

But the time will come when the bulk of our fighting will be done automatically, I hope. One of those who doesn't like to get shot at."

## Bikini Was Science Test, Observer Warns

McGraw-Hill editor says news data was sought, not glorified bombing attack.

(The following story was released from *Knowledge* by Phil Stenz, editor of *Power* magazine, and one of the four McGraw-Hill observers at the Bikini test last.)

**Kwajalein**—From my stand on the sky deck of the press ship, *Asheville*, about 100 yards from the blast, the vast target fleet lay hidden below the horizon. First through welder's goggles, and then with uncovered eyes, I saw the metal rapidly expanding half of the ring and the rising of the great golden mushroom which expanded to a height of five miles in a few minutes, and ultimately up to seven miles.

The dead was beautiful and impressive, but many poses were found less dramatic than they had expected in the initial bright flash and as the model forms that reached their apex about 100 seconds after the flash. They forget that even the greatest things can be dwarfed by distance. At five miles, exactly, the same bomb burst could have been described as sea-surfacing without any exaggeration.

**Warnings Ignored**—Despite many warnings that this was a laboratory setup, not a simulated attack against a fleet normally anchored in a harbor, news men were tempted (and some yielded) to play up a strictly technical operation as a sort of glorified bombing trial with navy ships as the goal. By itself, the number of ships sunk or damaged meant nothing, the results can be varied by speeding the ships or bringing them closer together. Despite much gossip to the contrary I think it obvious that the first test was obviously well designed to carry out the President's directive that guided defense, from great to slight, should be obtained.

The true aim of these tests was

to secure a set of data in curves, rather than a few score-curve correlating pressure, temperature and damage in every ship and every part and every piece of equipment.

But the time will come when the bulk of our fighting will be done automatically, I hope. One of those who doesn't like to get shot at."

Operation Crossroads will not last less than one year, but will give data essential for the design of new ships and bases and the dissemination of facts.

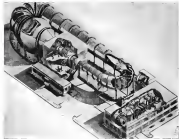
## NAA Will Hold First Post-War Meeting

Going into its first national convention in five years this week, July 17-18, the National Aeronautics Association, the country's oldest aviation group, probably will emerge with a new organizational structure.

While no formal announcement has been made of plans to revive NAA at the national level, the board of directors for some time has studied a plan to bring its executive organization more nearly in line with NAA's widespread activities.

A clue is what possibly may emerge from the meeting this week at the Hotel Powhatan in Omaha, Neb., is seen in recent concentration by NAA on coordinated efforts with other organizations both in and out of aviation. This activity is symbolized by the past year's conferences on airports, private flying, air defense, safety and youth education.

Mass business before the three-day meeting will be election of officers by the national committee, about 100 of which will attend the convention. Prior to the business meetings delegates will be addressed by leading figures in aviation, including L. Welch Pope, former CAA chairman, William A. M. Burton, assistant secretary of Com-



**New NACA Wind Tunnel:** Outlines of the low-turbulence open-jet new wind tunnel at the Ames Aeronautical Laboratory. Air is circulated by two 10-hp variable pitch air-cooled fans powered by electric motors totaling 12,000 hp. Because of the high pressures in the test chamber, all readings are measured in a master-control point outside the chamber. Also because of the high pressure, as well as the speed of the flow, designers of the tunnel ran into a cooling problem. Air is cooled during compression by water-cooling coils. After compression, cooling is accomplished by Freon. An exhaust water-cooling system sprays the top of the tunnel to keep the duct temperature down.

## New Wind Tunnel Opened by NACA

Moffet Field installation designed for low turbulence flow, only one of its use in world.

A new wind tunnel, which boasts one of the greatest delicacies in tunnel testing, the turbulence of the air rushing through the test chamber, will be opened tomorrow at the Ames Aeronautical Laboratory of the National Aeronautics Association at Moffet Field, Calif.

This low turbulence open jet tunnel, the only one of its size in the world, is considered to be the nature of a standard for wind tunnel and at least a partial answer to criticism recently directed at this form of aerodynamic testing. For the first time it will be possible to a tunnel to test models under conditions closely duplicating free-air studies. **Sherman Officials**—Noting the limitations of wind tunnels, already engineers at The Glenn L. Martin Co. and at California Institute of Technology have begun freer testing of actual models (Aviation Staff, June 26, 1945).



COMPOSITE-ENGINE DOUGLAS XA-38.

Fitted with a GE I-16 turbine in space formerly given to four piston's compartment, in addition to standard P-40 Dodge Wasp power plant, this modified Douglas Invader recently set speed record of 413 mph between Dayton and St. Louis carrying 2,235-lb. payload. Assembling I-16 unit was completed for 45 during flight. Installation was made during week to add 35 mph to craft's 360-mph-plus top speed. Thrust it provided through a 79-31 tube of 17 in. dia. Note intake is form of fuselage behind wing, and exhaust orifice under radiator. (Merris & Kellogg photo)





# COOLING TURBINES

TO AIR CONDITION  
JET FIGHTERS, BOMBERS,  
COMMERCIAL AIRCRAFT



## Revolutionary New Development Makes Possible High Speed, Pressurized Flight

AirResearch Air Research Turbine units provide long-term results in the pressurized cabin of the Lockheed Constellation, the Douglas DC-6 and the Constellation 200, three of America's fastest and most luxurious transport ships, soon to be in service. These turbines will be utilized in systems which cool the fast compressed air from the cabin superchargers before it reaches the passenger cabin. The result is a comfortable, air-conditioned cabin at any altitude, at any speed and in any climatic condition.

AirResearch is the first to apply the principle of the recuperator air turbine in aircraft supercharging. It made this

supercharger air by expanding it from high pressure down to cabin pressure and taking "wet" out of it.

A complete line of air turbine turbines, both low and high pressure, weighing from 2 to 45 pounds and with maximum drop-out from 40° to 130° have been developed. Operating at speeds from 15,000 RPM to 100,000 RPM, the units incorporate a self-contained lubrication system, and require no oil or other source of power. The large single turbine unit now in production will make available 12 tons of refrigeration for cooling cabin air.

AirResearch cooling turbines are being used in new planes of Douglas, Lockheed, Consolidated, Fokker, North American, Republic and Boeing. The AirResearch background of engineering skill and research is available to help solve your AIRCRAFT supercharging problems. AirResearch Manufacturing Company, Los Angeles 45, California.

| TYPE      | AIRFLOW<br>SEE ABOVE | TURBINE<br>WEIGHT | TEMPERATURE<br>DROP | B.P.P.  | SEVERITY             |
|-----------|----------------------|-------------------|---------------------|---------|----------------------|
| Single    | 7 lbs.               | 3 lbs.            | 125°                | 100,000 | Jet Fighters         |
| Single    | 30 lbs.              | 5 lbs.            | 125°                | 85,000  | Jet Fighters         |
| Single    | 30 lbs.              | 10 lbs.           | 130°                | 40,000  | Jet Aircraft Bombers |
| Single    | 30 lbs.              | 24 lbs.           | 47°                 | 15,000  | Const. Aircraft      |
| Best Shop | 42 lbs.              | 23 lbs.           | 97°                 | 50,000  | Const. Aircraft      |
| Best Shop | 100 lbs.             | 42 lbs.           | 120°                | 25,000  | Const. Aircraft      |



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## PRODUCTION

## Boeing, Lockheed Survey Public To Get Best Feeder Designs

New trend seen as poll of potential riders preliminary to transport production; Sectors aimed at short routes.

What is most at a new trend in the development of airplanes for transport planes—particularly those to serve small communities—is being noted in the recent announcements by both Lockheed Aircraft Corp. and Boeing Aircraft Co. regarding their feeder planes, the Sectors and Model 417.

Departing from past practices, these manufacturers based their design primarily on surveys and interviews with potential riders in the airplanes. In the immediate past, manufacturers have designed planes on the basis of the needs of their direct customers, the airlines. Prior to that period, the aircraft producer first conceived plane designs, then tried to attract airlines to purchasing.

**Trend Toward Sectors** — The present trend from a combination of feeder producers, manufacturers — having either operators of the riding public as well as the airlines—can now go to airlines with designs of planes the manufacturers can show are desired.

This method leads down a tortuous road that was pointed out by Lockheed's president, Robert E. Groves in his announcement at the Sectors. First, Lockheed surveyed "hundreds of potential regional airports." Research men then specialized in traveling many miles throughout the country and interviewed prospective airline passengers.

Analysis of opinions from these two groups were then put before the engineers. The result was that 18 separate models of the Sectors, each with from 15 to 20 modifications, were necessary before the design seemed to meet the majority of the recommendations of those who had been interviewed.

**Boeing Uses Research** — Before creation of both the Sectors and the Model 417, Boeing released a research agency that compiled a cross-section of various populations on such questions as "Which do you

think is less comfortable, a train or plane trip?" "In what ways do you think an train is less comfortable?" The answers to these questions then were broken down according to age group and type of employment. Boeing took the complaints and applied engineering principles to eliminating the structural and aerodynamic reasons for them.

Armed with statistics on airline passenger habits and dislikes in airplanes, and, at Lockheed's case, an actual prototype of the proposed aircraft, both companies have opened their sales campaigns. Boeing's effort was backed-off at a recent sales meeting in Wichita, where the 417 is being produced, which culminated a three-year program of study and development. Groves made his announcement at

a special gathering in New York. With the Sectors, Lockheed is shooting at the feeder market with an aircraft which, in capacity, is not duplicated either as production item or, at the same time, on highways. Its capacity of 16 is about midway between that of Beech Aircraft's Model 44 and Boeing's Model 417. However, Boeing considers the Model 417 as a competitor of the Sectors, despite the capacity of from 20 to 24. The 417 can operate economically, the company claims, with but 12 passengers aboard.

## Canadian National Research Group Establishes Test Base

A flight research base is being established by the Canadian National Research Council at the Royal Canadian Air Force station at Armstrong, Ont. While the Council will finance and operate the center, the RCAF will supply the planes, pilots and maintenance staff.

Granted to furnish facilities for checking in actual flight data obtained in wind tunnels, the Armstrong base will be on a modest scale, with probably not more than 150 men and five aircraft.

The Council's division of mechanical engineering near Ottawa already has three wind tunnels, two horizontal and one vertical.



**"Sectors" Selling Points** The rear view of Lockheed's new "regional" transport, the 14-passenger Sectors, illustrates some of the features on which the manufacturer is concentrating—high-wing for passenger safety, near-to-the-ground fuselage so that passengers can enter from a three or four-step step that can be carried in the plane, allowing necessary for large, expensive passenger-loading equipment.

## Wright Lecture Cites British Research Lag

Warlike research curtailed by emphasis on production, lack of wind tunnels and essay series

Public admission that England lags well behind America in fundamental aerodynamic research is seen in the Thirty-fourth Wilbur Wright Memorial Lecture delivered recently in London by E. F. Relf, Principal, College of Aeronautics, Cranfield, England.

Although indicating clearly that English scientists are working hard along the same lines as Americans, the lecture suggested an apology for the currently static position of British research while giving praise, both directly and indirectly, to the advanced state of fundamental aerodynamic research by our own National Advisory Committee for Aeronautics.

Relf expressed great faith in possible future experiments with boundary layer control in England at a time when Rover Aircraft Corp. is completing construction of its M.O.-1, which utilizes the theory for both drag-reduction and lateral control (Aviation News, July 1).

Other Low Aspect Ratio—He also believed that low aspect ratio, airplanes as low as one, offers promise for high speed flight at a time when Chance Vought Aircraft has announced the completion of four-year experiment with low aspect ratio design and ensuing test flight of its XP5V-1, end-product of such research (Aviation News, July 1).

Relf pointed out the difficulties of the wind tunnel at extreme speeds (NACA, No. 8-41a 14) and suggested that "free drag" tests of weighted models might offer a satisfactory substitute, a technique not method already in use by NACA's Langley Memorial Aeronautical Laboratory for many months (Aviation News, July 16).

**Perilous Observation**—Among Relf's observations were:

- The problem of supersonic flight is even more simple than subsonic flight problems due to the existence of a completely different aerodynamic theory available from nearly a century of research into ballistics and the flight of artillery shells.

- Boundary layer control offers numerous advantages to supersonic flight: "holding away" the bound-



### SILVER METAL WING:

Eastwold Airplane Corp., Delta, Tex., has gone into production on an all-metal wing for its Silver personal plane waiting that plane, according to the company, the only all-metal lightplane in volume production. By employing a simple design for the wing, rate of production is advanced. The wing is composed of steel parts, all of which are replaceable.

ary layer near the trailing edge permits the use of very thick wings with no greater drag than thin wings, providing a solution to the stretched problems of supersonic flight, "blowing away" the boundary layer near the leading edge of thin wing sections prevents them to develop more than twice their normal lift without excessive drag penalty. It also shows promise for the reduction of drag at wing-fuselage intersections, thereby replacing drag-producing fillets.

- Flight research work on laminar flow profiles was provided during the war by a "wing-around" profile mounted on a Bell X-1.

England's wartime research work was drastically curtailed by the threat of enemy action, the loss of key personnel and the greatest preoccupation with production and applied research problems. Much of Britain's wartime research was allotted to turbo-jet engine problems and still remains a top priority item.

England's present backward status in fundamental aerodynamic research is due, largely, to a severe shortage of high-speed wind tunnels. England has only two supersonic tunnels as compared to about a dozen in the U. S. with others under construction and an equal number in Germany during the war.

### Plan for C-67 Conversion Established in Oklahoma

Establishment of an aircraft modification and repair plant in Tulsa, Oklahoma, employing 5,000 persons, was announced by W. R. Berry and John F. Loughren of Oklahoma City, following completion of negotiations for 400,000 square feet of space in the former Douglas bomber assembly plant here. The new firm will convert surplus C-67 military planes into DC-8's for sale to commercial airlines. Berry was with the Douglas modification center in Oklahoma City as chief modification engineer and has also served with American Airlines, Inc., as a senior engineer, while Loughren is a former navy pilot familiar with aircraft repair and conversion work.

### Ex-Cello-O Fuel System Ordered for Four Planes

The Ex-Cello-O direct fuel injection system for lightplanes (Aviation News, July 6, 1946) has been specified as standard equipment on three models of Continental engines, and four types of personal aircraft, the company has announced. The planes are the Cessna Model V, Fleet (of Canada) Cessna, Commercial Trimmer, and All American Aerobatic Kings.



## WHATT A PEACH— SHE'S A BEECH!

Say, you'll be up in the air in more ways than one when that new Beech of yours goes humming down the runway!

If you're one of those modern-minded executives who knows that an airplane is good business, we're all for you. For our business is doing business with folks like you.

So—whenever you fly in the great Middle West, you'll find fields displaying the Orange-and-Black "66" Shell. That "66" stands for the finest possible in aircraft fuels and lubricants. They've been developed and distributed by one of America's most stimulated companies, for an ever-growing air-minded public. The Aviation Department, Phillips Petroleum Company, Bartlesville, Okla.



**AVIATION GASOLINE**



**After hours**, when aviation men talk shop, you'll sometimes hear them speculate as to what inventions or developments have merit the most to aviation progress. High on anybody's list should come modern high-octane gasoline . . . and the more powerful, more efficient engines that this gasoline has helped make possible. Many an increase in speed, range, payload, or ceiling has resulted from the improvement in the antiknock value of the fuels made available by oil refineries.

*Ethyl Corporation*  
 Chrysler Building,  
 New York City



Manufacturers of Ethyl fluid, used by all companies  
 to improve the antiknock quality of aviation and motor gasoline.

## Aircraft Behavior Data Gathered in Bomb Test

Kew-Forest (Special to Aviation News)—A complete picture of the behavior of aircraft engines and accessories under the probable flight conditions of atomic warfare is now in the hands of evaluation experts of Operation Crossroads.

The four B-17 Army drones which plunged through the blast cloud at altitudes of 15, 18, 24, and 30,000 ft., were recovered by their mother planes without mishap and returned to perfect landings at Eggenstein AFB. One of them was "bleeding" fuel with gamma radiation. Drones observed experienced no interference with radio, television, or airplane electric systems when the B-17s went into the cloud. Neither was there engine power loss. An early estimate of results gave no indication that turbulence within the cloud at any levels was sufficient to result in structural damage to the planes. Eight white rats, the first living things to ride as passengers through a radioactive curtain screening the doorway of an atomic age were alive and frisky when their cages were lifted from the B-17s.

Each B-17 drone had a torque meter on its No. 3 engine to provide stress recording of any power losses experienced in the atomic cloud through oxygen starvation or other causes.

Cumulative recording flight



### AUTOMATIC RELEASE:

Developed for emergency use at extremely high altitudes, this parachute permits the engine a five-minute warm-up period. After release, then, upon automatic release is reinitiated by barometric pressure which affects an aneroid that determines a parachute, pulling the release.

By the time the engine is started, the parachute is pulled, pulling the release.



### 'WINGS' ON THE WAY TO COMPLETION:

So confident was Northrop Aircraft, Inc., in the success of the XB-45 Flying Wing that production on the entire AAF order of 15 had been started even before the first flew. Here are numbers two, three and four under construction at Northrop Field, Hawthorne, Calif.

analysts also were included in the planes.

Particular importance attended the operation of a television camera trained upon a selected group of flight panel instruments in each plane, that was watched and photographed from the receiving television screen aboard each drone's mother plane.

**Maximum Radiation:**—The instruments readings recorded the air speed indicator, manifold pressure gauges of outboard engines, altimeter, flux gate compass, and "GT" meter.

No less important were recorded readings of each drone's barometric altimeter radio channel to check accuracy or prolonged effect of peak radioactivity upon the basic electric systems of the drones as well as radio installations.

### Ryan Adds Employees; To Reach 2,000 by Fall

Ryan Aeronautical Co. will add new employees at the rate of about 100 a month for the next five months, bringing its total employment to about 2,000 by Fall, president T. Claude Ryan has announced.

In a reversal of general pessimism among most aircraft manufacturers, Ryan reports that it has been adding engineering personnel, increasing that category by one-third in the past six months. Twenty-five were added in a two-week period. The over-all situation regarding the industry is extremely critical (AVIATION NEWS, July 8, 1946).

Ryan states that the employment increase is necessary to build commitments on military and civil development contracts, and because of the existing business in

Ryan's division manufacturing subsonic aircraft systems. One of the experimental projects on which the company is working is an advanced model of the Navy's F-100 fighter which has beta jet and conventional engines.

### Martin Has Order Backlog For 259 Twin-Engine Planes

The Glenn L. Martin Co. now has on its books orders for a total of 259 twin-engine fighters and 259 transports from eight domestic airlines and two foreign countries.

The line-up early in July of Martin orders was: Canadian Air Force, six B-27s, Northwest, ten B-27s, forty B-27s, Chicago and Southern, seventeen B-27s, Boeing Airplane, thirty B-27s, Eastern, fifty B-27s, PCA, fifty B-27s, United, thirty-five B-27s, Transair, seven B-27s. Services Aeronautiques du Bel. of Brund, has ordered ten B-27s, and the Dacota airlines of Argentina, four.

### Fairchild Corp. V-Loans Is Reduced to \$5,000,000

Effective today, Fairchild Engine and Airplane Corp. voluntarily reduces its V-loan credit with banks from \$10,000,000 to \$5,000,000. This is the third reduction since the line of credit was arranged at \$25,000,000 in Nov., 1944.

Wells Wilson, Fairchild treasurer, points out that the company has not used the credit since Sept., 1945. Although it is not anticipated that although no need of the remaining \$5,000,000 is envisioned now, it is being retained as a guard against possible future financial requirements.

## Airline Stocks Continue to Sell At Up to Seven Times Book Values

Prices are down 25 to 35 per cent from last prices earlier this year; deficits reported in first quarter had sobering effect.

Airlines continue to sell at unrealistic premiums to book values. However, market prices close to actual asset values currently then they were some six months ago. At the present time, market prices range from 1.9 to 1.5 times indicated book values. Early this year, the values for these same carriers ranged from 5% to 14.

Floating prices in relation to equity positions has been one of the most notable investment puzzles. Late last year and continuing into the early months of 1966, airline stock prices were unusually strong and floated prominently at the market leaders. The future prospects of the industry were being discussed in a very optimistic manner. Much of this enthusiasm was subsequently corrected.

**Airline Prices Down**—Currently, most airline prices are down about 25 to 35 percent from their last price attained early this year. The substantial deficits reported by virtually all of the carriers during the current first quarter was a sobering factor. It is becoming generally accepted in investment circles, that the future of air transportation, while having tremendous growth possibilities, is beset by many obstacles.

Recent market adjustments appear to have resulted in a far more realistic appraisal of current earnings and away from prospects of the airlines. Whether further downward adjustments will occur remains to be seen. The accompanying table presents the relative positions.

United Air Lines has the most conservative market to book value ratio, 1.6. This is probably due to the company's disappointing relative 1965 earnings performance. There is little indication to discount the future in any speculative terms. United has the highest book value of all the carriers. Some airlines are set to by the near future.

of the preferred stock earlier this year and the issuance of management stock.

**Spender's Interest**—American's common stock has the largest market valuation among the carriers. American has always enjoyed considerable speculative interest and its broad expansion plans have attracted many market followers, thus accounting for the 3.6 ratio. The recent five-dividend stock split helped create public participation.

American's total equity is increased considerably by auction of its \$40 million preferred stock issue sold a few weeks ago. It is interesting to note that about six months ago the common stock market value of United and American were the same.

There is a spread of about 34 percent in American's favor. A substantial decline of American's present common may occur. To the extent that the airline 400,000 shares of preferred stock may be converted into about 1,000,000 shares of common, no detriment will be suffered.

lured by the latter class with the price now around \$16 per share.

**National Has Highest Ratio**—Continental Airlines, selling at 7.5 times its book value, has the highest ratio of the group. Evidently, the company's growth prospects are considered to be very promising, based on its New York issue and recently awarded run to Denver.

Continental Airlines, which for some time maintained the highest market to book value ratio, is down to 4.8. This compares with a ratio, rarely below 10 and closer to 15 in recent times. This change was a natural development due to the sale of 60,704 shares of additional stock, or one-third of its then outstanding issue, at \$16 per share early this year.

Prior to this sale, the book value was slightly better than \$3 per share. The bolstering of the overall equity position is obvious. Due to limited marketability, the stock previously experienced sharp upward fluctuations. With more stock available, this market in this issue are as larger common.

**Mid-Continental Lowest**—Mid-Continental has the lowest absolute book value, approximately \$1,260,000 as of June 30, 1965. Chicago & Southern and Continental, however, are about tied for the lowest market valuation of the group.

In viewing all of these relationships, companies must be taken of the leverage provided by the funded debt subordinated to the equity issues in capital structures. Presently, in this respect are \$48 million for Eastern and Western and \$11 million for PCA.

AIRLINE MARKET PRICES AND BOOK VALUES

| Company                       | Common Shares Outstanding | Approximate Book Value | Total Market Value | Ratio Market to Book Value |
|-------------------------------|---------------------------|------------------------|--------------------|----------------------------|
| American                      | 6,002,000*                | \$16                   | \$95,215           | 3.6                        |
| Boeing                        | 1,000,000                 | 26                     | 26,000             | 2.2                        |
| Chicago & Southern (Missouri) | 214,000                   | 30                     | 30,460             | 2.50                       |
| Continental                   | 571,716                   | 20                     | 5,440              | 4.0                        |
| Eastern                       | 68,000                    | 17                     | 11,000             | 4.2                        |
| Kaiser                        | 2,284,000                 | 76                     | 42,340             | 3.00                       |
| Mid-Continental               | 595,000                   | 17                     | 6,000              | 1.76                       |
| Norfolk                       | 500,000                   | 16                     | 7,000              | 2.00                       |
| Norfolk                       | 300,000                   | 17                     | 5,100              | 1.60                       |
| Norfolk                       | 500,000                   | 17                     | 22,000             | 2.00                       |
| PCA                           | 101,000                   | 16                     | 1,600              | 4.0                        |
| UTA                           | 82,000                    | 34                     | 4,770              | 12.50                      |
| United                        | 1,000,000                 | 16                     | 17,110             | 2.70                       |
| Western                       | 1,261,116                 | 28                     | 35,480             | 3.00                       |

\*Including C. R. Smith's option on 200,000 shares at \$16.76 per share. No provision for the potential conversion of 600,000 shares of preferred at \$16 per share into a total of 1,000,000 shares of additional common.

## PRIVATE FLYING

### New Variable Pitch Propellers Added to Many Lightplanes

Piston models will feature more efficient props, as optional equipment due to cost; many manufacturers in field.

By ALEXANDER McSURELY

Contrastable, selective, two-position, or ground adjustable propellers may be expected to equip most personal aircraft except those in the aviation price bracket, within the next year or two.

Advantages of changing propeller pitch, from the flat blade used at takeoff, to a blade angle which takes a larger bite of air when the plane flies in cruising altitude and settles down to level flight have long been appreciated by aircraft engineers.

But the fact that a fixed pitch propeller can be made and sold for about one-fifth the cost of a variable-pitch prop has been a strong deterrent factor in a market so heavily price-sensitive as the light-plane field. The extra weight in the mechanism required to change pitch is another factor to be considered. But this is a relatively minor factor since the performance and fuel economy advantages of pitch change usually more than offset the weight disadvantage.

**Competition Limited**—Principal current competitors in the personal plane field in production of variable pitch propellers are Seneca Aircraft, Littleton, Pa., largest maker of fixed pitch props, Aeromarine Propeller Division, Koppers Co., Baltimore, Continental Motors Manufacturing, Bush Aircraft Corp., Wichita, Harbord Propellers Co., Pease, Ohio, Weyburn Special Aircraft Corp., New York, and Thomson Industries, Long Island City, N. Y.

Principal manufacturers of propellers for larger horsepower engines which may be expected to compete in the smaller variable-pitch propeller field if it becomes sufficiently attractive include Canard-Wright, Caldwell, M. J. Hamilton Standard, Red Hatfield Corp., Aeromarine, Dayton, Ohio and American Propeller Corp., Toledo, Ohio.

Other propeller companies, most of them making only fixed pitch propellers, but some of which may be developing variable pitch models include: Freedman-Bernheim Engineering Corp., Cincinnati, Flot-Wing Mfg. Co., Grand Rapids, Mich., McCracken Corp., Dayton, Ohio, Pacific Mfg. Co., Columbus, Mo., Socon Propeller Co., Wichita, Kan., U. S. Propellers, Inc., Pasadena, Calif.; Gardner Propeller Co., Westfield, Wis.

**Orders Accepted**—Analysis of the current status of propeller sales by leading lightplane manufacturers indicates that with few exceptions the manufacturers are specifying fixed pitch propellers as standard equipment on their models.

However, many of the manufacturers of planes above the minimum 65 hp range of power, have contracted with one or more of the propeller companies to supply the variable pitch propellers to them for factory installation at the option of purchaser at a higher price.

There is a strong possibility that the improved performance of the variable pitch propeller-equipped planes may be such a strong selling point that a large percentage of the customers will want to take the equipment, at the increased cost. Assuming that this will enable the propeller manufacturers to go into quantity production of the variable pitch models, it seems quite likely that the production costs of these may be brought down to near that of the fixed pitch type. Then the ultimate result may be that one or more manufacturers may apply the variable pitch props as standard and others will follow.

**Not Standard Equipment**—Until such a mass swing begins, a realistic study indicates that very few planes will provide standard-equipment variable propellers.

Republic has indicated it will supply a ground adjustable Aeromarine propeller, produced by Aeromarine Division, Koppers Co., as standard equipment on the four-place Rebel amphibian. A Harbord propeller with reversible pitch, an important advance in steering, far any airplane, is offered as an optional extra.

It is likely that the new four-place Birch Model 35, now being test flown, will probably use a variable pitch propeller manufactured by the parent company, as standard equipment. The new two-position hydraulic Seneca-type propeller at expected to go on the Calver Model V as standard.

Service reports that production installations, presumably at



BAUMANN BRIGADIER

An artist's conception of the newly designed Baumann Brigadier 250, 1200-engine pusher personal plane (Aviation News, July 1). Powered with 125 hp engine, the four-place plane is made by Baumann Aircraft Corp., Reno, Calif. Plans are expected to sell for less than \$10,000 and prototype is due to fly in November.

engine's option at increased prices in most cases, are being made at the factory, of Aeromarine propellers as two-place biplane Super 13 and 145 hp. Builders four-place Crusier, and North American Mustang, and two-three-place Luscombe. Prototypes of a number of other "new line ribbons" personal planes, according to Ed Fritzer, Aeromarine division manager, are now undergoing performance at the Aeromarine poplars.

**\$11,000,000 Orders**—The Hallicrafters manufacturer currently reports that its 1944 orders for three models have exceeded \$11,000,000. Two models were in quantity production are the F-206, for Super shell engines of 65 to 128 hp, and Model 220 for No. 38 engine engines of 150-200 hp. After adjustment at installation, the Aeromarine is designed to be fully assembled in the field in 10 to 15 minutes, and fly with no need of attention from the pilot, through a system of radio controls.

Little information has yet been received on the new Aeromarine two-position propeller, expected to sell for around \$250. However it is known that one of the first ones has already had considerable flight experience on the Piper J3C-14 (120 hp) biplane plane, built for the army by the newly manufactured quantity due to the constant of the war. The propeller is controlled hydraulically from the cockpit by the pilot.

A crowd adjustable model with plastic base blades manufactured by Hercules Propeller, Inc., is being offered at a retail price of \$102 in a new Hercules Aircraft Aeromarine Catalog, subject to last dealer's conditions.

More detailed descriptions on other valuable pilot propellers made by Berch, Continental, Walworth, Gossner, and Thomson Industries, have already been carried in previous issues of *American News*.

## New Lightplane Field

An airport being constructed primarily for the servicing of private planes will be opened within a few weeks about 10 miles west of Harrisburg, Pa., opposite the Mechanicsburg Naval Supply Depot. The field will be owned and operated by Richard W. Weisley. Two new, 1944 and 1936 Jeeps, are now being ground. The field will be equipped with hangars and sheds and will have a building for offices, a snack bar, lobby and observation service.



**All-Metal Luscombe:** The Luscombe two-place biplane now boasts an all-metal wing, of aluminum construction, using two metal spars and two ribs internally. Already in production, the new wing achieves a five-to-eight mile-an-hour increase in speed over the previous fabric-covered wing used. Luscombe is also using a single non-adjustable strut brace between wing and fuselage with the new wing, in place of the conventional double strut brace used on the old Luscombe wing, and on most other two-place light-wing biplanes. The all-metal wing makes it possible for the biplane to claim a unique standing as the only completely all-metal biplane in quantity production.

## New All-Metal Wing Made for Luscombe

A new all-metal wing of streamlined, simplified design, replaces the fabric-covered wing previously used on the Luscombe biplane, and is now in production at the Luscombe Aircraft Corp. plant at Dallas.

The wing is built around two metal spars, and uses only two ribs for each wing. The remainder of the load is carried by the metal skin itself. The simplified construction has eliminated much internal complexity, so that the gross weight of the new metal wing is almost identical with that of the fabric-covered wing it replaces.

The new wing uses a single non-adjustable strut brace, between wing and fuselage, instead of the double V-strut previously used. The single strut provides easier access to the cabin, and improved visibility both for pilot and passenger, in the side-by-side two-place biplane.

besides advantages of maintenance and production efficiency, the new wing improves the plane's aerodynamicity, and results in an increase in speed reflected at five-to-eight miles an hour, over the more complex with the fabric-covered wing.

Luscombe has been a pioneer in metal aircraft construction in the biplane field, having produced plants with all-metal components except wings, for approximately 12 years. The addition of the all-metal wing to the biplane, according to Leopold H. P. Klotz, Luscombe president, makes the biplane the only completely all-metal lightplane in mass production in the world today. The planes are now being produced at a rate of 12 a day.

## Lack of Engines Forces Cut In Taylorcraft Production

Taylorcraft Aviation Corp., Allenton, Ohio, last week announced a curtailment of production to 33 planes a week, due to inability of engine manufacturers and sub-contractors to supply a sufficient quantity of powerplants to match production of completed airframes. Nash Reed, president said.

Due to the dearth of the output, affecting 1800 workers, would depend on engine shipments. The curtailment came only a few days before the company had announced a production of 38 airplanes a day, believed to be the highest rate yet attained by any personal aircraft manufacturer.

## Scinson Orders 2,000 Franklin '355' Engines

Scinson division of Consolidated Vultee Aircraft Corp., has placed an order for 2,000 more of the 158 hp. Franklin "355" six-cylinder horizontally-opposed air-cooled engines used in the four-place Scinson Voyager 180. The order was in addition to Scinson's initial order of 1,600 of the engines.

The Model 355, first Franklin post-war model to go into quantity production, is a development from a basic military engine used during the war in radio-controlled C-47 target planes.

Among its features are: new all-aluminum cylinders, steel intake group, revised heavy-duty crank shaft, external oil-pressure relief valve, and specially designed carburetor with built-in altitude control, carburetor pump and safety relief, features usually found only on much larger engines.

In announcing the additional Scinson order, C. F. B. Barb, president of Air-Cooled Motors, Inc., Syracuse, N. Y., pointed out that many favorable reports have already been received from Voyager 180 owners about the smoothness, quietness, economical operation, and performance of the engine.

## Downtown Airport Work Begun at Oklahoma City

Construction has started on a \$200,000 downtown airport for Oklahoma City, which is expected to be ready for flying as soon as Aug. 15. The airport, only a short distance from the heart of the Okla-

homa City business district, will have a 2,400 ft. North-South runway, and a 2,350 ft. Northwest-Southeast runway, both with 200 ft. width.

Harner B. Darling, Jr., head of a group of Oklahoma City business men interested in the project, says the completed airport will provide longer space for 200 planes, an administration building, sales service and also parking facilities. It is planned primarily for the use of business-men flyers who use their planes in their business.

## CAA Warns U.S. Pilots On Canadian Rules

United States pilots planning to fly across Canada to Alaska, via the Northwest Staging route, are advised by the CAA to learn and follow Canadian regulations during their flight over Canada. Full information and proper forms and regulations may be obtained by writing Northwest Air Command, Edmonton, Alberta, or Department of National Defense, Ottawa.

Swearing violation of Canadian regulations have already caused several arrests by RCMP planes in which the search planes have been lost. W. P. Platt, CAA Regional Administrator for Alaska, stated recently.

Regulations provide among other things that planes must carry a 45 minutes reserve fuel supply in addition to actual route requirements, must carry five pounds of emergency rations per person in waterborne conditions, must be equipped with two-way radio, and carry emergency equipment such as cooking stove.

and, a compass, matches, fishing equipment, sleeping bag, snow shoes, and other equipment not to be left to prevent passengers and crew.

Landings and communication fees must be paid, and transient pilots must file a flight plan on Canadian Form 740.

## Hallicrafters to Supply Bell 'Copter Radios

Contract to supply all radio requirements for the new Bell two-place helicopter, Model 4704, has been awarded to Hallicrafters Aircraft Corp., Philadelphia, national distributor for Hallicrafters Skyline radio, James H. Hulse, president, announced last week.

The Bell helicopter will use Hallicrafters Model CA-100 radio transmitter-receiver set, as what is believed to be the first application of private plane radio in helicopter use. The installation required in adapting the set to the helicopter, involved problems of radio light modulation, and engine vibration noise, since the radio antenna is necessarily close to both rotor and engine.

Hallicrafters now has orders for 15,000 Skyline radios including specially altered antennas to supply the equipment for the Scinson Voyager 180 and the Cessna Model V two-place plane, in addition to previously announced contracts for standard equipment two-way installation in the Republic Beech and the Piper Super-Cruiser.

Distributors now signed to handle Hallicrafters Skyline include Snyder Aircraft Corp., Chi-



## THOMPSON RECAP SERVICE

Recap service to provide plane owners in California to recap provided by Thompson Aircraft Tire Co., which has some of its own plants on top of truck as that pilots do not have to get their tires retreaded. Truck is stocked with every retread and will take

trade-in or return amounts after retread. Currently truck calls on airports once a week. Later these trucks will be sent to cover territory. Plans are far from to carry complete line of small aircraft accessories in addition to tires.



**AERIAL PATROL.**

Loera Cariberg, East, Ohio, wears pilot and instructor (right), and his son Bob, have completed their first year of patrol flying at 28 to 40 ft. altitude, where electric power lines and old pine trees in Texas, Oklahoma, Missouri, Indiana and Illinois. They are shown with the in the patrol, flying at about 15 mph, along the forest, and carrying about 6,000 miles of powerline and pipeline each month. They estimate having saved thousands of dollars in quickly shutting breaks in the lines.

mpa, Van Dusen Aircraft Supplies, Minneapolis and other branches, Flight, Inc., Cleveland; Western Skyways Service, Portland, Ore.; Buffalo Aeronautical Corp., Buffalo, and all Paper airplane distributors.

#### **Fly-Away-Factory Service Offered by Pioneer ATC Men**

Efforts from the automotive industry's still-ongoing lag of trucks from Detroit men have established a fly-away-factory delivery service for lightplane manufacturers. It is similar to the drive-away business service Detroit auto plants. Seymour Karp and A. Alan Weinstein, organizers of the new service, have recruited former Air Transport Council pilots for the flying work. The pilots have an average of 18 years flying experience. At present, the firm is handling 100 planes a month.

Ferrying rates are between 70 and 110 cents, with an average of 100 cents per airline mile as all

## **Briefing** *For Private Flying*

**CAP CHARTERED**—President Truman's recent action signing a bill unanimously passed by both Houses of Congress to grant a federal charter to Civil Air Patrol, completes authorization for the Red Cross chapter approved in 1937 year. It gives CAP institutional status similar to the Red Cross, Boy Scouts, American Legion, and Veterans of Foreign Wars. The program was awarded to CAP's wartime service in coastal and border patrol, target aerial, observing, search and rescue and other missions in which more than 50 CAP airplanes were lost. Under leadership of Col. E. L. Johnson who continues as national commander, CAP is expected to continue serving in civilian contingencies where aircraft are useful, and to emphasize its civil program closely tied in with the AAF's air reserve. A major six show in each state this year, with AAF participation is planned to cause funds for CAP operations, centered chiefly since AAF support will be withdrawn next March.

**150 IN ERGO FLYING CLUB**—Employees at Engineering & Research Corp., Riverdale, Md., have a flying club with more than 170 members to fly the two-pipe Kivings which the company has provided for club use. In June, the employees flew 311 1/2 hrs. at 114 1/3 hrs./plane.

**FOREIGN GLIDER SHIPMENTS**—Schweizer Aircraft Corp., Yverdon, has shipped foreign shipments of gliders and sailplanes, by sending a two-place BGI 2-2 glider to Buenos Aires, Argentina, and a single-place SAIL-10 glider to Rio de Janeiro, Brazil, and others to the Argentine and Brazil. The gliders are shipped to the Argentine and Brazil by the Argentine Air Force, while the gliders are shipped to Brazil by Brazilian Aviation which expects to form glider clubs in the United States and in Northern Rhodesia also. The two models are designed with very similar glider characteristics to large and small gliders in use in the world. The company has received a large number of inquiries from foreign countries where the gliding and sailing movement is subsidized by national governments. The Norwegian Aero Club recently bought 20 Schweizer single gliders from surplus Sweden, France, Holland, Belgium, Denmark and Australia are other areas which have indicated interest in the Schweizer sailplane aircraft.

**BARA-KIT AFTER 48 MONTHS**—A bulletin prepared by the Civil Aeronautics Board signed by the distribution to Bureau Military pilots, via a pertinent question in its title: "Why General Bara-Kit after 48 Months?" The bulletin is a copy of the Government's position on the Bara-Kit, D. C., the principle may be questioned with advantage by the military aviation community in their facilities. Amongst the slightly reversed explanation of the need for transition training in stepping down from a high-powered military pilot to a 65 hp lightplane. "How many accidents, attributed to reversed transition, would down if they got into an airplane's hands?" the pamphlet asks.

**SALESMANSHIP HOTTED**—The inventory of outproduction New York may not be as well suited for use of general-duty personnel aircraft as it is in the past. It is going to be subjected within the next few months to the test of the best sales organization in the field. Sales of this place appear to be increasing by establishment in New York, J. C. (Jew) Welch, former Stinson sales director, who now heads Pioneer Airplane Sales Corp., New York City, distributor, with offices at 121 West 42nd St. M. Welch will be in charge, among others, with such salesmen as George (Jimmy) Lewis, veteran sales executive, and Al Bennett, former Air Force sales director, now selling at his New York Avenue dealership, the department store outlets of Keweenaw, Piper, and Taylorcraft, and the fact that Republic Aviation Corp. will distribute concentrate heavily on building sales in its home town inventory, if the record New York air show is any indication.

Popular types of aircraft plans, particularly passenger expense is reduced, because a pilot on a run can pick up another new plane for delivery at the delivery nearest his original delivery point.

## **TRANSPORT**

### **Steamship Lines Face Possible Loss of Half Luxury Travel to Air**

**International airlines boosting traffic while surface carriers wait for recovered lines; biggest air gains seen on Hawaii run**

**By MERLIN HICKS**

Optimistic wartime predictions of high airline penetration into transoceanic passenger business are being borne out by recent sea-air developments in disavowal to surface carriers. On a few routes, surface lines are that planes will carry almost all first-class traffic heretofore serviced by ocean liners.

Even before the war, ocean air carriers were invading many ocean ship passenger routes to a far greater degree than domestic airlines were tapping Pullman traffic. In 1941, the route of American air to Pullman travel was less than 1 percent. At the same time, the airlines share in 1944 Caribbean and Latin-American passenger traffic was about 21 percent.

**Airline Cut 50 Percent**—The ratio of plane to Pullman traffic now has climbed to between 20 percent disastrophically, but it overseas transportation the airlines, by steamship companies' own admission, stand to garner half of the first class passenger business in the next few years. Several steamship firms have told CAB that they may be "bent to death" by passenger diversion to the surface unless they are permitted to operate subsidized air-sea services.

In certain cases, their proposals may be fulfilled despite continued by some surface lines, which plan cutbacks would provide at much new traffic that surface carriers would actually gain business.

It is ship lines are not in a completely vulnerable position. Their large passenger fleets, without exception, were pressed into troop-carrying duties during the war, and most of these ships will require many more months to be reconstructed for commercial use.

**Fast Air Lines**—There are signs that steamship passenger lines on both U. S. and foreign lanes will be equal to or above sea-air rates. Overseas plane firms, by contrast, will be well under 1941 levels.

The Sea-Air Committee of the National Federation of American Shippers asserts that CAB's Hawaiian decision (AVIATION NEWS, July 7) designed a certificate in Marine Transport Co. "Further lightens a view which is eroding the American Merchant Marine." The shipping group and the Board has extended to the Pacific the "huge monthly of overseas aviation that the tightly knit empire of domestic airlines now enjoys."

Steamship airlines currently are divided into two camps regarding the possibility of obtaining favorable consideration of the new route from CAB in the future. One group feels that the Board, with a new chairman (James H. Leland) and a recently-appointed member (Norman M. Young), may yet revise its stand against surface carrier participation in air transportation. **Fast New Line**—There is also considerable sentiment for abandonment of the old route, which would be equal to or less than ocean ship rates. Pan American, which now operates daily Coast-to-Coast service to Honolulu, cut its one-way fare from a previous \$115 to \$105 in March. UAL proposed \$125 one way in its application for the route.

In the Atlantic, the airlines have a tremendous head start on post-war business. Only a few survivors will be in operation by fall, and surface firms promise to rise considerably over pre-war rates.

**Canceled World New Line**—Odds are strongly that the Queen Elizabeth begins postwar service this fall the summer first-time passage between New York and Southampton will be around \$350, "perhaps more."

It is estimated, percent New York-London service here in 1973, with prospects of a reduction to \$320 under the schedule proposed at IATA's North Atlantic Traffic Conference last month. Results undercutting the first-class fares on the

Committee should go all-out to obtain from Congress a "reversive measure through legislation." It is thought that coordination of this campaign with previous new legislation by sea-land-air carriers against CAB policies might be extremely effective in restoring public opinion and stirring Congressional action.

The West Coast to Hawaii route, which United Air Lines will soon try in competition with Pan American Airways, is in conflict example of potential airline penetration into steamship passenger business. In 1941, approximately 45,000 passengers traveled between the mainland and Hawaii. Of these 95, or less than 2 percent, flew.

Surveys taken by Marine show that around 100,000 passengers will travel between the West Coast and Hawaii in the first annual post-war year, and that 87 percent will go by plane. Marine, which was intrinsically in a position to traffic to the islands, had all its passenger vessels adapted to war service. To date, only one has been converted for passenger operations, and the company's full list of losses will not be available before next spring.

**United Plans DC-4's**—United intends to inaugurate flights between San Francisco and Honolulu in 1946 in DC-4's (New DC-4's) and present ships are scheduled to the run. Announcement probably will come soon that it has ordered Boeing Stearman's for the operation. President W. A. Patterson states that IATA's new schedule will be equal to or less than ocean ship rates. Pan American, which now operates daily Coast-to-Coast service to Honolulu, cut its one-way fare from a previous \$115 to \$105 in March. UAL proposed \$125 one way in its application for the route.

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temper lanes, the airlines offer service directly to London and Paris, while the carrier's current dock at Southhampton and Chelmsford, necessitating additional expense and surface time alone the 4½ to 5 days consumed at sea.

## Helicopter Mail Runs Begin at Los Angeles

Army crews fly two routes for Post Office in 30-day test to obtain operational data.

Tests of suburban-metropolitan helicopter mail service being conducted in the Los Angeles area through the cooperative efforts of the Army and Post Office Department were in full swing last week after preliminary service flights.

Initiated by the Department, the 30-day trials were being run to determine the practicability of similar operations in all large metropolitan areas throughout the Nation. Data obtained on operations and maintenance costs, equipment and personnel requirements, mail volume and time reduction effected by the new type of service will be submitted to CAB by the Department as the outcome of hearings on helicopter applications. The tests also will determine practical routes, suitable landing areas, and workable time schedules for the Los Angeles area, for which the Board will hold helicopter hearings next 8. The data is a prerequisite to permit submission of data obtained in the tests.

The experiments mark the third time in the Nation's history the Army has carried mail by air. On May 15, 1953, the Post Office Department and Army Air Service started an experimental line between Washington and New York. It lasted three months. Again on Feb. 23, 1954, when mail contracts were withdrawn from the commercial airlines, the Army carried the mail.

**Project "Mail"**—Now the AAF again is assuming the Postal service—first time in an experiment known as "Project Mail." Six helicopters and their crews, working through the 42-11 Deliveries, 61st AAF Base Unit, March Field, Calif., on July 8 started preliminary flights over two wide suburban routes in the Greater Los Angeles area.

The Los Angeles area was chosen for the initial experiment because of its crowded population, the distribution of its outlying communities, and its varying terrain and weather conditions. Post Office representatives first selected 34 landing and takeoff sites in the various districts, but after consultation with the pilots flying the two routes—one inland and one on the coast—34 new sites were selected for the helicopter stops.

**Route Search**—At the end of the 30-day test period, the Army-Air Office team hopes to have the answers to the proper method of mail handling, suitable distances between stops, pilot fatigue and the cost of maintenance. It was indicated that three trained helicopter mechanics and three pilots would be needed to keep the five test planes up to a 1,200-hr. per year utilization.

**Consensus to Meet**—The Airlines Negotiating Committee immediately called meetings in New York to consider the Board's proposed terms and determine the cost of meeting. Committee spokesmen gave general opinions that agreement could be reached with the Air Line Pilots Association on the basis of the Board's recommendations.

They said the question of settlement rests chiefly with David L. Belasco, ALA president, some of whose major demands were rejected or modified by the Board.

The report, said a spokesman for the Railway Labor Board, is merely a basis for further negotiations.

Portant information obtained will be compiled for CAB for its guidance in passing on future route applications. The Post Office will participate in their review.

The Army hoped to be able to keep up schedules which were set as showing one-minute stage at pickup points. The helicopters are flying two flights per day on each of two routes (AVIATION NEWS, June 24). Time for the inland route, with 18 stops, is 1 hr. 52 min.; for the coastal route, with 14 stops, 1 hr. 27 min.

Three R-5D's were made available for the experiment in addition to March Field's three R-5A's, the former a four-place plane and the latter a two-place craft.

**Air Lines Board Rules On TWA Pilot Case**

Preferential group recommends wage increases below ALPA demands; recognizes airline wage committee.

By IRVING STURMFIELD

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These (1) recognized the airline wage negotiating committee, (2) recommended the present Board for computing pilot pay, (3) recommended pay increases considerably below pilot demands, and (4) declined to limit flying hours and overtime minimum hours.

Proponents of the recommendation at the White House July 8 began a 30-day period to Aug. 8 during which parties agree to remain in status quo. In effect, management agrees not to hire and the pilots agree not to strike.

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time between the parties. If they fail to agree, ALPA can issue another strike and after Aug. 8.

The Board consisted of Justice George E. Baskin of Michigan Supreme Court, Dr. William H. Lammont of Washington, and Dr. John A. Lipp of Chicago.

**Board Sides with ALPA**—Major differences preventing settlement months ago was the serious insistence on dealing through their wage negotiation committee. ALPA refused to recognize the Committee, and insisted on negotiating with its company at a time. The Board sided with its most by recognizing the committee as agent of the 13 airlines involved in the 4-month program, but conceding to single-company negotiations.

It referred American Airlines' case back to the parties for settlement on basis of its TWA recommendations for further mediation. All the other: American Overseas, Swift, Chicago & Southern, Delta, Eastern, National, Northwest, Northwest, PCA, United, and Western, were referred back to the parties with suggestion that they be settled on the basis of recommendations in the TWA case.

**Pay Formula Equitable**—ALPA conceded the Board that all but the TWA case were in various stages of negotiations and could not properly be considered emergencies for disposition by the President's emergency board.

The Board found that the present pay formula is equitable but should be extended to cover speeds above 224 mph. Monthly pay formula should be extended by 10 cent increments for each additional 25 miles flown per hour above the present top bracket of 300 miles or



**RADIO DIRECTION:**

When trucks handling ground transport of Chicago Air Line aircraft at Chicago (AVIATION NEWS, July 8) have two-way radios, shows here is use by a driver, for instructions on package and delivery.



**PCA Ties Milk Run.** Sampling the subject of a recent experimental flight by PCA is President C. DeWitt Moore (right), R. W. Broderson, president of Southern Dairy, and John Westcott, PCA assistant. The flight went from Milwaukee to Knoxville and Birmingham via Washington, where the picture was taken. (PCA photo.)

more per hour. Mileage rate for monthly mileage of 12,000 or more at more than 100 mph should be increased from 3 cent to 1½ cent.

Base pay for all classes of first pilots on international runs should be increased \$750 per year, with hourly and mileage pay the same as on domestic routes, the Board said. Co-pilots in domestic service should get an added 10 cent per mile for monthly mileage of 12,000 or more at speeds over 100 mph, and on international runs a comparable rate of 41 cent per hour should be paid them for day and night time, plus 1 cent per mile for 12,000 miles or more at 100 mph, plus 12¢ per month in qualifying increments.

The Board found pilots request for thresholds on monthly and yearly flying hours and mileage, as well as guarantees of minimum monthly flying hours. It recommended various rules on compensation, and on flying and living conditions.

## UAL Boosts Order

United Air Lines has increased its order for Martin 160's to 36. Thirty-five were ordered from the Glenn L. Martin Co. 166 January with option to purchase 35 more. United expects cost of the 36 to approximate \$12,857,500.

## PCA Experimental Flight Tests Air Milk Deliveries

Average of southern markets for north central dairy products, PCA has conducted an experiment in the air transport of fresh milk from Milwaukee to Knoxville and Birmingham. Forty pilots from a Milwaukee dairy were aboard the airplane.

C. DeWitt Moore, PCA president, conceded that high cost of new milk deliveries by air, but noted that by 1959 it may be possible to supply fresh milk to Florida and return with fresh orange juice. He expects PCA expansion to mean a task plane for possible logistic.

No special preparations were made for the experimental flight. The milk was cooled to about 35 degrees at Milwaukee.

## CAB Men to Alaska

Civil Aeronautics Board sent two men to Alaska last week for a two-weeks' inspection of air transport in the Territory. Russell B. Adams, director of the Board's Economic Service, was accompanied by Perry B. Baker, accountant and auditor in the Bureau. They flew to Anchorage to talk with Raymond W. Stough, chief of Civil Alaska office, before their return here.



TRANSPORT—39

## Full Fares for Children?

THE LATEST full page magazine advertisement of the Air Transport Association is headed, "The Easiest Way to Travel With Children." A friend of ours, the father of three children, sends a tear-sheet of the ad with the penciled comment, "Not when you have to pay full fare for them!"

He has a strong point. We believe the advertising agency and the airline officials who approved the message have brought up a subject that might well have been unpublished until the industry changes its policy of charging full rates for any child under two occupying a seat, and for all children over the age of two.

Many travelers unfamiliar with the airlines do not know about this full-fare custom, nor will they understand the reasons for it as readily as aviation people. The advertisement may well attract an increasing number of parents to ticket offices, where they will learn very quickly, but perhaps only after many plans have been made on a basis of one-half fares for children. The result can easily be disappointment, and unnecessary ill-will for the airlines.

Several lines already make an exception to the full fare practice for any child over two. They include Canadian Pacific, Hawaiian, TACA and Pan American, which carry children between two and twelve years of age at half fare rates and permit them to occupy seats.

No one in aviation takes issue with the full fare practice in these days of tremendous demand for seats and shortage of aircraft. But we believe it is wrong to bid publicly for family travel without telling the truth about children's fares in the same message. And we hope that all of the other airlines will make plans to follow the leadership of the first airlines mentioned above as soon as possible. It is another necessity of air transportation to serve the whole public.

## More Bureaucracy

THE AIRWAYS regulation issued during the war requiring annual inspection of aircraft has grounded hundreds of planes throughout the country, according to the alert United Pilot & Mechanics Association. Many owners simply have been unable to obtain the services of designated maintenance inspectors or CAA inspectors before the July 1 deadline. UPMMA some time ago urged CAA to repeal section 4932 and requested return of the 100-hour inspection for all planes. The CAA Safety Bureau's answer was that since the private owner is no longer required to have a 100-hour check, he should have an annual inspection.

"The private owners did not ask to be relieved of the 100-hour check, nor did they want the annual inspection restored," UPMMA says. "The 100-hour check gave us a satisfactory safety record during the war, so why should we return to the 'harm and buggy days' of annual inspections that cause a lot of extra trouble and really do not accomplish anything that a 100-hour check wouldn't accomplish?"

What the Washington officials simply cannot understand, for some inexplicable reason, is that 900-hour checks could be obtained by the private plane owner from any one of some 20,000 licensed A&E mechanics who are available everywhere throughout the country. Yet there are hardly 750 persons in the entire country who are eligible to make an annual inspection—less than 500 CAA inspectors, and only some 500 aircraft maintenance inspectors. Still, these are the same government authorities who will about shortages of staff and overwork inspectors as an alibi for the poor service to the public.

Is it any wonder that the long-shamed and neglected aircraft owner blames Washington?

## IAT's Expensive Offer

THE INSTITUTE OF AIR TRANSPORTATION, representing many unaffiliated and non-scheduled air carriers, recently offered to carry air mail for 3c a letter. The statement won wide play in the press.

But it is not generally realized that most of the air mail already moves at a cost to the Post Office approximately one-fourth of the rate suggested by the IAT.

The average distance traversed by a domestic air mail letter, according to the Post Office, is 1,511 miles. The Post Office considers that there are about 40 letters to the pound. Therefore, at 3c a letter the IAT carriers actually are requesting about 12¢ a ton-mile.

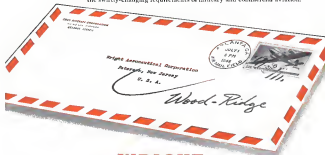
In contrast, Eastern, American, TWA and United now receive only 4½¢ a ton-mile for carrying air mail.

## No Better Rocket?

ANYONE who had only 25 captured German V-2's to conduct their high-altitude tests, and were wondering how to dispose of them, are first. Despite several fine problems and setbacks, all well publicized, nearly two years after the first V-2 made its appearance in England our services can boast no U.S.-made rocket that approaches the V-2 in size or speed.

ROBERT H. WOOD

**After 26 Years . . .** Wright Aeronautical Corporation is transferring all of its operations to its new, modern plant at Wood-Ridge, N. J., after more than a quarter-century in Paterson, during which the city became the world center of aircraft engine development. Complete, compact, yet larger than the old plant, the Wood-Ridge factory will combine every modern feature for production and advanced research. This move will further contribute new power for the swiftly-changing requirements of military and commercial aviation.



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